Examining Developed versus Emerging Economy Online Food and Beverage Purchase Behaviour and Predictors: A Survey Comparison of Indian, Chinese, Indonesian, Japanese and United Kingdom Consumers

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Authors' contributions

Authors CS and PD developed the initial concept for the research, provided critique of earlier versions and approved final content. Author TD is the principal investigator. He oversaw the research process and worked primarily on study design, literature review and manuscript writing. Author PT was responsible for statistical analysis including econometric modelling. Author PR was responsible for survey administration and data management. Author MG assisted with survey design and administration. All authors read and approved the final manuscript.

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ABSTRACT

Aims: Consumers are increasingly using online shopping for purchasing food and beverage (F&B) products. A challenge to industry stakeholders is understanding which elements of online digital media and smart technologies are associated with higher rates of online expenditure that could be strategically targeted. Therefore, the central aims of this study are to identify predictors of online F&B expenditure, and how they differ across developed and emerging economy consumers.
Study Design: This is a quantitative study based on cross-sectional survey data.
Place and Duration of Study: The study is based on data collected in India, China, Indonesia, Japan and the United Kingdom in April 2016.

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Methodology: Primary data is collected using online surveys of consumers primarily responsible for F&B grocery shopping within the household. Questionnaires focused on eliciting online expenditure rates for F&B, and associated use of relevant online digital media and smart technologies. Fractional multinomial logit modelling is used to identify statistically significant determinants of respondents' percentage of expenditure online in each country.

Results: The sample consists of 5,004 respondents: China (1,001), India (998), Indonesia (1,002), Japan (1,002), UK (1,001). In-market technology use is a stronger predictor of online F&B expenditure in emerging than in developed economy markets. The influence of digital information sourcing behaviour and demographics are weak predictors of online F&B expenditure across both developed and emerging economy markets. In general, consumers in emerging economies show greater engagement with digital media and smart technology in relation to online F&B expenditure than their developed economy counterparts.

Conclusion: There is significant variation across countries in the specific determinants of online food and beverage expenditure and the uptake of associated digital media and smart technologies. These insights provide useful direction for focusing effort in targeting channel activators specific to each markets characteristics.

1. INTRODUCTION

Rising use of e-commerce (online shopping) and other smart technologies (e.g. social media, smartphones) have created a new model for consumer purchasing behaviour in international markets [1]. As Internet-enabled technologies have become more accessible and affordable, their adoption has increased internationally [2]. These technologies allow users to access significantly more information, suggesting their potential as marketing tools to inform consumer choices [3]. Emerging economy markets are expected to experience the highest e-commerce sales growth in coming years [4] and is expected to account for 20 per cent of all retail sales by 2022 in these economies [5]. Previous studies suggest that online shopping services in emerging economies may lack consumer awareness, have fragmented supply chains causing reduced service availability, and multiple other social, technological and economic barriers to widespread service dispersion compared with developed country counterparts [6,7,8,9]. These differences in online shopping services between developed and emerging economy countries motivate the need for the comparative study presented here.

While many studies have examined developed economy consumer preferences for online shopping services for non-F&B products, there have been scant studies examining these services for F&B products in emerging economies [10]. Online platforms offer F&B providers an opportunity to promote and sell products directly to consumers in diverse markets at lower cost while retaining a higher share of product value otherwise lost in more complex value chains [11]. However, the lack of F&B-specific studies presents a challenge for F&B providers in developing online strategies relevant to specific countries' consumers with differences in online purchase behaviour and predictors for F&B products likely [12].

Therefore, the main objectives of this paper are to model emerging economy consumers' online F&B expenditure, and to identify similarities and differences between developed and emerging economy consumers' online F&B purchase behaviour and predictors. To achieve this, responses from identical surveys of emerging economy markets of China, India and Indonesia, and developed economy markets of Japan and the United Kingdom (UK) were analysed using fractional logit models to examine the influence of demographics, perceived benefits of online shopping, digital media engagement, and in-market technology use, on consumers' percentage of online F&B expenditure. To the best of the authors' knowledge, no studies currently exist that explicitly identify differences in consumer e-commerce use between developed and emerging economy F&B markets. In providing direct cross-country analysis, this study contributes to expanding limited understanding of online behaviours and predictors in emerging economy F&B markets, and is particularly relevant to those concerned with direct marketing strategy implications of online consumer behaviour in these markets.

2. LITERATURE REVIEW

2.1 Online Shopping Trends

The majority of online shopping behaviour research has focused on general online shopping. While several studies have examined online shopping in the grocery channel (encompassing F&B and non-F&B products), few studies have focused specifically on F&B goods [13,14,15]. For example, Carpio et al. [11] found that, in the UK and US, food sales accounted for less than 4 per cent of total online sales, suggesting that marketing for online food sales is not yet as developed as other categories. Kapoor and Vij [16] conducted an analysis of Indian consumer preferences for attributes of mobile apps for food delivery services, finding a positive relationship between the apps' design elements and consumers' use intentions. Lin et al. [17] conducted a series of choice experiments to determine Chinese consumers' willingness-to-pay for online food product characteristics, finding a range of premiums for characteristics of pork products sold online. Online shopping provides consumers with key benefits of the ability to easily search for product information and purchase products, compared with traditional brick-and-mortar retail [18].

Studies typically analyse the role of the individual benefits that consumers may obtain from using online shopping, such as product variety [19,20,21], convenience [9,22,18,20,21,23,24,25] and service quality [22,19,21]. There is general agreement in the literature that consumers perceive access to lower-priced products to be a key benefit [9,19,20]. Consumers also find the ability to compare products and make international purchases of products not available domestically as important benefits [19]. Subsequent research extends these insights to a framework [26] to identify different typologies of shoppers according to combinations of motivations [27]. On the opposite side, other studies investigate why people do not buy online, pinpointing deterrents such as risk [21,28] and trust [23,24,29].

Literature examining relationships between smart technology and online shopping use encompass product information searching and purchasing. Different information sources have been examined, such as those that generate electronic word-of-mouth (eWOM) including blogs, forums and social media [30,31,32], with the communication and exchange of eWOM shown to be significant in forming consumer attitudes and preferences [33]. A limited number of studies find that consumers who access information using mobile device functions (e.g. apps, QR codes) are more likely to use online shopping services [34,35,36,37,38]. In addition, consumers who frequently use different types of mobile technologies to purchase products online are also more likely to use online shopping [36,38,39]. Perhaps unsurprisingly, consumers who previously purchased larger amounts of products online are more likely to continue to use online shopping [9,40].

The influence of demographic factors on online shopping use is unclear, with mixed evidence shown for consumers in a range of countries. However, some patterns have emerged from the literature. Higher income has been shown to correlate positively with increased use of online shopping [20,21,41,42,43]. There is also evidence that higher educational attainment and a higher number of children correlate positively with increased online shopping use [21,43]. For other demographic factors such as age and gender, evidence is mixed and demographic determinants may be country-specific [19,20,21,24,25,39,43,44,45,46,47].

2.2 Differences between Developed and Emerging Markets

Considering the countries analysed in this study, there is a relatively large body of literature analysing developed economy markets, while emerging economy markets have received scant attention [10,48,49]. The exception is China [19,21,46]. The most frequently suggested determinants of UK online shopping use include higher educational attainment, the benefits of convenience and lower prices, and a higher degree of current in-market technology use [38,40,50]. For Japanese consumers, determinants are suggested to be trust in service security, experience with Internet technologies, and perceived benefits of lower prices and product variety [13,51]. China has received relatively more attention with studies suggesting that younger consumers with higher incomes and education, as well as preferences for benefits including lower prices, home delivery, product variety and availability, and greater current use of smart technology are more likely to shop online [19,21,34,46]. However, the next most populous developing countries, India and Indonesia, have received scant attention. For Indian consumers, the most frequently suggested determinants of

online shopping include key benefits (lower prices, greater product variety, home delivery) and existing technology use, with mixed evidence regarding demographic factors [25,39,41,52]. Much less attention has been focused on Indonesian consumers, with little available literature indicating that consumers' attitudes influence their intention to use online shopping, with those with previous online experience more likely to make purchases [53,54,55].

Overall, this literature signals probable differences in determinants of online shopping use in diverse international markets that motivates the contribution of this study. Moreover, few studies have conducted direct comparisons examining e-commerce use between developed and emerging economy markets [56]. Studies of cross-cultural online shopping adoption and use have mostly focused on the US and China. While some studies have examined cross-cultural use of online shopping, few have included more than two countries. We develop a set of variables for analysis grounded in the literature above that we test across countries.

3. MATERIAL AND METHODS

3.1 Consumer Survey

An online survey was developed and administered to consumers in five countries selected to include both emerging (China, India, Indonesia) and developed (Japan and the UK) economy markets. Survey development was guided primarily by literature review and coordination within a wider research programme examining F&B consumer preferences and purchase behaviour [57]. Scoping surveys of 100 consumers in each country aimed at identifying the set of main factors relevant to F&B market behaviour. This sample size reflected the qualitative open text response nature of the scoping survey instrument and was found to be sufficient to achieve thematic saturation. For the full survey, sampling size was set a 1,000 usable responses to allow for robust statistical analysis and for the possibility of split sample auxiliary analysis. For both the scoping and full surveys, questionnaires were translated into the native language and were other identical. The survey instrument consisted of questions regarding consumption behaviour, use of digital media and smart technology in relation to F&B information searching and purchasing behaviour, and

perceived benefits of online shopping. The survey finished with demographic questions, including age, gender, household income and educational attainment.

Specifically, respondents were first asked to indicate the percentage of their F&B and non-F&B expenditure online. Using a five-point Likert scale, respondents were then asked how often they used a range of technologies to purchase F&B products, including mobile apps (applications installed on smartphones), QR/bar codes (respectively 2- and 1-dimensional images that can be scanned with a smartphone) and microchips (installed in smartphones that can interact at proximity with other devices, such as RFID and NFC chips) to purchase F&B products (never/rarely/sometimes/ often/always). Using the same Likert scale, respondents were asked how often they searched for F&B information using the following smart media sources: social media, food company web pages, blogs, Wikipedia, chatrooms, forums, QR codes, mobile apps, barcodes, and microchip reading technology. To measure the perceived benefits of using online shopping, respondents were asked to indicate their level of agreement (strongly disagree/disagree/neither/ agree/strongly agree) with the following statements: prices are generally lower online; comparisons of food and beverages are easier to make online; the variety of food and beverages is better online; I like the convenience of having products delivered to my house; I like being able to order products from overseas that are not available domestically. These questions were included based on previous literature review showing defined differences in the key determinants of online shopping behaviour in the countries examined. The key variables can be seen in Table 2.

To increase reliability, surveys were targeted to consumers who were primarily responsible for F&B grocery shopping within the household and had shopped for F&B at least once in the previous fortnight. Consumer samples were obtained via ResearchNow™ (researchnow.com), an international consumer research consultancy that maintains a large global database of consumers. This sampling approach was chosen as the most practicable given limitations in obtaining sampling frames in emerging economy markets comparable to typically utilised registries of voters available in developed countries. Surveys were implemented online in April 2016.

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3.2 Statistical Model

A fractional multinomial logit modelling approach is used to identify statistically significant predictors of respondents' percentage of F&B expenditure online. Papke and Wooldridge [58] propose this method to model fractional response variables that range on a continuous scale between 0 and 1 which describes the nature of the dependent variable for this study. The set of explanatory variables is made up of in-market technology use for product search and purchase behaviour, perceived benefits, and respondent socio-demographics [58]. Following Papke and Wooldridge [58], we specify a general econometric model under the fractional multinomial logit setting as follows:

$$\text{Prob}(\textit{Percentage of food budget online} \mid X) = G(X\beta)$$

$$= G \left(\begin{array}{c} \beta_0 + \sum_{i=1}^{n} \textit{Socio - demographic Characteristics}_i \\ + \sum_{i=1}^{n} \textit{In - market Tech Use}_i \\ + \sum_{i=1}^{n} \textit{Percieved Benefits}_i \end{array} \right)$$

$$(1)$$

Where,

$G(\cdot)$ is the logistic function and X is the vector of explanatory variables. The dependent variable is the fraction of F&B expenditure carried out online that takes continuous values between 0 and 1. For statistical analysis, binary variables were constructed for each use of smart technology and digital search behaviour Likert scale questions, equal to one if a respondent used a factor often or always and zero otherwise. Similarly, binary variables were constructed for each perceived benefit equal to one if a respondent agreed or strongly agreed with the statement, and zero otherwise. Demographic variables of age, income and education are treated as categorical variables; while gender and households with children are treated as binary.

4. RESULTS AND DISCUSSION

4.1 Sample Characteristics and Variable Descriptive Statistics

Sample distributions over age, education, gender, and household composition demonstrate that the samples covered a broad range of individuals (Table 1). Importantly, these samples are not intended to be representative of a country's overall population, rather the relevant population that we attempt to draw inference on are consumers who are the primary household F&B purchasers. Population characteristics of this group of consumers are not known with a degree of accuracy equivalent to census level that facilitates meaningful statistical comparison. Gender ratios across countries are similar, with noticeably more males in the Indian sample. Age ranges are similar, although Japanese and UK samples are noticeably older. Most participants had children and held at least a tertiary qualification. While a majority of Japanese participants held a tertiary qualification, most Indian participants held a University degree or higher.

Looking at model variable descriptive statistics (Table 2) reveals behavioural differences between consumers across emerging and developed economy markets. Consumers in emerging economies conduct substantively more F&B expenditure online compared to their developed economy counterparts, with Indian consumers spending the most on average (40%). While the percentage of non-F&B expenditure carried out online is similar across all countries. Notably, the use of in-market mobile technologies for purchasing F&B is far higher by consumers in emerging economies. Similarly, in-market technology use for F&B information search is greater by consumers in emerging over developed economy markets. These observed differences could be explained by the generally younger consumers in emerging versus developed economies, with prior literature suggesting that age can be a significant moderating factor for expected online and mobile shopping use [44,59].

4.2 Fractional Multinomial Logit Modelling Results

Fractional multinomial logit models were estimated separately for each country using econometric software Eviews ® 10 (Table 3). Looking first at online and smart technology purchase behaviours as a predictor of online F&B expenditure. For Indian consumers, the amount of non-F&B expenditure online is the most important predictor of F&B expenditure online, and is also a significant positive predictor for Indonesian consumers. However, for Chinese, Japanese and UK consumers, online non-F&B expenditure is not a significant predictor

of online F&B expenditure, suggesting that F&B and non-F&B online purchasers may be unique consumer groups within these countries. Overall, in-market technology use for purchasing appears to be a stronger predictor of online F&B purchasing in emerging economies than in developed economy markets. In particular, Indian and Indonesian consumers exhibit strong associations between all in-market technology use and increased online F&B expenditure. The only use by Japanese and UK consumers associated with higher expenditure are QR/barcodes and mobile devices respectively. Across all countries, except Japan, those consumers who use mobile devices for F&B purchase are more likely to spend more of their F&B budget online, indicating that this behaviour may be a common predictor across emerging and developed economy consumers. These findings are consistent with previous literature finding consumers in emerging markets with higher prior use of smart technology are more likely to engage with online shopping [34,35]. Gao et al. [34] found that Chinese consumers' attitudes towards mobile marketing activity is underpinned by several factors, including their degree of innovativeness (defined as willingness or predisposition to using new products) and level of personal attachment to mobile devices, which in turn correlates positively with their willingness to engage in mobile marketing activities. Similarly, Kim et al. [35] found that Korean consumers with higher online and mobile shopping experience exhibit higher rates of online and mobile shopping purchases than those with less experience.

Table 1. Sample socio-demographic characteristics

	China	India	Indonesia	Japan	UK
Female	50%	32%	42%	52%	57%
Age					
16-29	25%	47%	40%	8%	12%
30-44	58%	43%	50%	40%	37%
45-59	15%	8%	10%	41%	38%
60-75+	2%	3%	0.4%	12%	13%
Education					
Up to High School	1%	1%	0.3%	1%	3%
High School	4%	2%	15%	18%	9%
Tertiary-below degree	16%	3%	14%	19%	11%
University degree	68%	41%	61%	48%	41%
Post-graduate	12%	52%	10%	13%	36%
Household composition					
Single, no children	18%	37%	29%	27%	10%
Single, with children	2%	4%	2%	4%	4%
Couple, no children	5%	11%	6%	13%	29%
Couple, with children	74%	45%	59%	55%	54%
Household annual income	¥85,000-¥94,999	R 260,000 - R 299,999	< Rp15 M	<500M 円	£80,000-£89,999
	16%	17%	22%	20%	29%
	¥95,000-¥99,999	R 300,000 - R 339,999	Rp15 M-Rp30 M	500M 円-799M 円	£90,000-£99,999
	14%	17%	20%	30%	28%
	¥100,000-¥149,999	R 340,000 – R 379,999	Rp30 M-Rp60 M	800M 円-1099M 円	£100,000-£149,999
	28%	12%	21%	30%	28%
	¥150,000-¥199,999	R 380,000 – R 419,999	Rp60 M-Rp90 M	1100M 円-1399M 円	£150,000-£199,999
	16%	14%	17%	13%	6%
	¥200,000-¥249,999	R 420,000 - R 459,999	Rp90M-Rp120M	≥ 1400M 円	£200,000-£499,999
	12%	13%	8%	7%	3%
	≥ ¥250,000	R 460,000 – R 499,999	>Rp120M		≥£500,000
	14%	25%	12%		3%

Table 2. Model variables descriptive statistics

	China	India	Indonesia	Japan	UK
Product purchase behaviour					
% F&B expenditure online[1]	0.39 (0.3)[5]	0.40 (0.3)	0.31 (0.3)	0.19 (0.2)	0.26 (0.3)
% non-F&B expenditure online[1]	0.46 (0.2)	0.54 (0.3)	0.44 (0.3)	0.40 (0.3)	0.43 (0.3)
Use mobile device for F&B purchase[2]	0.27 (0.5)	0.22 (0.4)	0.18 (0.4)	0.05 (0.2)	0.06 (0.3)
Use QR/bar codes for F&B purchase[2]	0.16 (0.1)	0.11 (0.3)	0.10 (0.2)	0.01 (0.2)	0.01 (0.1)
Use microchip reading technology[2]	0.10 (0.3)	0.19 (0.4)	0.11 (0.3)	0.01 (0.1)	0.03 (0.2)
F&B information search behaviour[3]					
Social Media	0.50 (0.5)	0.46 (0.5)	0.59 (0.4)	0.17 (0.4)	0.11 (0.3)
Food company web pages	0.40 (0.5)	0.47 (0.5)	0.42 (0.5)	0.13 (0.3)	0.11 (0.3)
Blogs	0.36 (0.5)	0.45 (0.4)	0.49 (0.5)	0.16 (0.4)	0.11 (0.3)
Wikipedia	0.65 (0.5)	0.51 (0.5)	0.40 (0.4)	0.17 (0.3)	0.13 (0.3)
Chatrooms	0.33 (0.4)	0.35 (0.5)	0.38 (0.1)	0.05 (0.2)	0.08 (0.3)
Forums	0.42 (0.5)	0.38 (0.5)	0.38 (0.4)	0.05 (0.2)	0.09 (0.3)
QR-codes	0.32 (0.1)	0.27 (0.4)	0.19 (0.4)	0.03 (0.2)	0.04 (0.2)
Mobile apps	0.71 (0.4)	0.70 (0.5)	0.71 (0.5)	0.25 (0.4)	0.28 (0.5)
Barcodes	0.27 (0.4)	0.29 (0.4)	0.23 (0.4)	0.03 (0.2)	0.04 (0.2)
Perceived benefits of online shopping[4]					
Lower prices	0.27 (0.4)	0.20 (0.4)	0.15 (0.3)	0.15 (0.4)	0.07 (0.2)
Greater variety	0.18 (0.4)	0.18 (0.4)	0.14 (0.3)	0.09 (0.3)	0.05 (0.2)
Easier comparisons	0.13 (0.3)	0.17 (0.4)	0.20 (0.4)	0.09 (0.2)	0.06 (0.1)
Availability of products from overseas	0.13 (0.3)	0.06 (0.2)	0.11 (0.3)	0.05 (0.2)	0.03 (0.2)
Convenience of home delivery	0.18 (0.4)	0.12 (0.3)	0.14 (0.3)	0.32 (0.4)	0.37 (0.5)

Notes: 1Average percentage 2Average of binary variable (used often or always). 3Average of binary variable (used often or always). 4 Average of binary variable (agree or strongly agree). 5Standard deviation in brackets

Digital media information searching behaviour shows weak evidence of a delineation between emerging and developed economy consumers in predicting F&B expenditure. However, there is little consistency in the types of information sources as predictors. Information search behaviour has the greatest influence for UK consumers, where four of the seven information sources considered were statistically significant. While only single factors were significant for India (use of mobile apps), Indonesia (chatrooms) and Japan (Forums). Three of seven sources were significant for China for whom blogs were the strongest information source predictor. This is consistent with previous literature showing blogs to be highly influential to Chinese consumers regarding food consumption behaviour [60]. Specifically, Peng et al. [60] cite a historical food safety incident in which Chinese consumers used microblog technology for rapid large-scale dissemination of negative sentiment against the offending food manufacturer. This ultimately led to a swift reduction in consumer purchasing of these products, resulting in decreased sales volumes and brand reputational damages for the affected company.

Turning next to perceived benefits and their associated parameter estimates indicates that,

with the exception of India, perceived benefits have the greatest effect overall on consumers predicted percentage of online F&B expenditure. However, the type of benefit with the greatest influence varies over countries, with ease of product comparisons highest for Chinese consumers, greater variety highest for Indian and Japan, and lower prices for Indonesia and UK. This is consistent with prior findings that large segments of Indian consumers may value a range of perceived benefits of online shopping (e.g. access to higher quality goods) over access to lower-priced goods [41]. However, these findings also differ from previous findings that one of the most important benefits of online shopping for Chinese consumers is access to lower-priced goods [19,20]. In particular, Brashear et al. [20] found that Chinese internet shoppers valued a range of benefits of online shopping higher than non-internet shoppers, with price, product variety, risk aversion, convenience and brand awareness rated more highly than other benefits. This demonstrates that, while the literature indicates that access to lower priced goods is most highly valued by Chinese consumers, a range of other benefits are also valued relatively highly [20]. As shown in Table 3, there is very little difference between parameter estimates for lower-priced goods and easier

product comparisons for Chinese consumers, suggesting a similar level of preference for these benefits within this market.

Consistent across all countries, the role of demographic characteristics as a predictor of online F&B expenditure appears limited. While higher incomes are a statistically significant predictor for emerging economy consumers, associated parameter estimates are relatively low, and not significant for developed economy consumers. Age is only significant for UK consumers, for whom it is the only significant demographic with older consumers predicted to spend less on F&B online. Females are predicted to spend less in India and Japan, while Japanese respondents with children are also predicted to spend less. Overall, few demographics are statistically significant and those that are have a relatively low partial effect. This is consistent with previous findings that suggest that demographic characteristics (such as age) do not directly

correlate with frequency of online shopping in China and the UK, and are not significant predictors of online shopping use intention [20].

Concentrating within countries on the highest parameter estimates for each factor indicates the strongest single predictor for those countries' consumers. For Chinese consumers, making easier comparisons is highest, online non-F&B expenditure is highest for Indian, lower prices for Indonesian, greater variety for Japanese, and greater variety and lower prices for UK consumers. All, except for India, are perceived benefits of using an online channel. Taken as a whole, the factors that are statistically significant as well as their partial effect, shows that consistently over countries, perceived benefits are clearly the strongest predictor, followed by smart technology and online purchase behaviours, then information search behaviour, and lastly demographics. This is consistent with previous studies finding perceived service

Table 3. Fractional multinomial Logit estimation of percentage of F&B purchases online

	China	India	Indonesia	Japan	UK
Purchase behaviour					
% non-F&B online	0.20	1.34***	1.16***	0.30	0.12
Use mobile device	0.45***	0.26***	0.48***	0.11	0.78***
Use QR/barcode	-0.01	0.35***	0.24**	0.51***	- 0.04
Microchip	0.35***	0.60***	0.58***	0.28	- 0.01
Information Search behaviour					
Social Media	0.01	0.13	0.11	0.13	0.50**
Company pages	0.12**	0.06	0.03	0.21	0.32*
Blogs	0.26***	0.11	-0.02	- 0.03	- 0.10
Wikipedia	0.06	-0.003	0.11	0.05	- 0.10
Chatrooms	0.11	0.16	0.25**	- 0.10	0.44*
Forums	0.14**	0.13	0.10	0.40**	0.40*
QR-codes	0.01	-0.01	0.10	0.01	0.04
Mobile apps.	0.11	0.40***	0.05	0.02	0.05
Barcodes	-0.09	-0.05	0.17	- 0.42	0.34
Perceived benefits					
Lower prices	1.55***	1.01***	2.27***	2.44***	2.90***
Greater variety	1.40***	1.05***	2.13***	2.70***	2.90***
Easier comparisons	1.65***	0.87***	2.18***	2.56***	2.88***
Availability	1.41***	0.92***	2.07***	2.05***	2.65***
Convenience	1.40***	0.88***	1.91***	2.52***	3.10***
Socio-demographic characteristics					
Income	0.05***	0.03**	0.05***	0.02	0.01
Age	0.04	-0.02	-0.03	0.07	- 0.11**
Children	-0.03	0.10	-0.14	- 0.29***	0.04
Female	-0.06	-0.14*	-0.06	- 0.19**	- 0.09
Education	0.06	0.01	-0.03	- 0.07	- 0.01
McFadden Pseudo R^2	0.16	0.21	0.31	0.33	0.37
No. Obs.	1,001	998	1,002	1,002	1,001

*Notes: *, **, *** indicates significance at p<0.1, 0.05 and 0.01 respectively*

usefulness to be a strong predictor of online shopping use [61]. In their meta-study examining predictors of online shopping adoption and continued use, Lele and Maheskar [61] found that the perceived usefulness of online shopping was one of the most important predictors of re-purchase intention via online channels.

5. CONCLUSION

Understanding the diversity of consumer profiles across emerging and developed economy F&B markets is increasingly important to retailers as technology adoption and behaviours offer potential to engage and connect with more consumers. Marketers involved in increasing F&B expenditure online will benefit from developing approaches incorporating country-specific results found here. This study demonstrates similarities and differences in behaviours and predictors of emerging and developed economy consumers' online F&B expenditure.

Technologies for engaging with F&B products are more intensely used by emerging country consumers than those in developed economies. These differences in use are important to consider for those in international F&B marketing chains tasked with influencing consumer behaviour. A central implication is that successful consumer engagement requires a coordinated strategy targeting channels specific to consumer behaviours in each market. This information is valuable in its demonstration of technology use patterns by developing country consumers – an increasing area of focus for export-driven F&B providers in developed economy markets.

A key finding points to in-market technology use for purchasing being a stronger predictor of online F&B expenditure in emerging over developed economy markets. In particular, Indian and Indonesian consumers exhibit strong associations between all in-market technology use considered here and increased online F&B expenditure. F&B retailers targeting these countries may benefit from increasing efforts towards developing F&B-specific in-market technologies relevant to those consumers, and expanding the relevance of their use from non-F&B products. Whereas, the influence of digital information sourcing behaviour is relatively less and more varied across all countries with limited support for systematic differences between emerging and developed economy consumers. However, identifying the influence of digital

information sources specific to countries offers avenues for targeting those consumers more precisely. The role of demographics in predicting online F&B expenditure appears relatively narrow, a finding consistent across all countries. It is clear that, irrespective of country, consumers' perceived benefits of online channels are the most important predictor of online F&B expenditure. However, importantly, the perceived benefits favoured by consumers varies over all countries.

From a managerial perspective, several implications emerge. Firstly, results show a high degree of heterogeneity between consumer preferences for online F&B retail in the examined markets. This suggests the requirement of F&B firms to recognise and respond to these variations and incorporate these into a tailored approach. F&B manufacturers looking to directly sell their products online could appeal to the determinants of consumer use of online shopping elicited from this study. In particular, it is shown that traditional marketing methods (e.g. demographic-based) may not be as effective in an F&B online shopping context. Rather, marketers should focus on consumer preferences for online shopping benefits by improving service design and delivery. In particular, consumer preferences for specific service functionality and design could be customised to suit regional and cultural contexts by appealing to the preferred benefits outlined above. Practically, this could mean that existing online platforms used by F&B firms to attract and retain consumer interest in their products may need to be customised on a country-by-country basis in order to meet consumer needs. Similarly, this may require the creation of new platforms that better conform with consumer preferences within targeted markets. For example, Chinese consumers may prefer online F&B shopping platforms that enhance their ability to make easy product comparisons, while Japanese consumers may prefer platforms that provide a greater variety of F&B products. In addition, it could be effective to target consumers who are greatly engaged with a range of digital media and smart technologies by integrating online shopping services with these platforms.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and Ethical approval was granted for surveys used by the Lincoln University Human Ethics Committee.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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